

October 6, 2017

Submitted to: CAISO (regionaltransmission@caiso.com)

**COMMENTS OF NEXTERA ENERGY TRANSMISSION WEST, LLC
ON THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION'S
2017-2018 TRANSMISSION PLANNING PROCESS SEPTEMBER 21- 22, 2016
STAKEHOLDER MEETING**

NextEra Energy Transmission West, LLC (NEET West) appreciates this opportunity to provide comments on the California Independent System Operator Corporation's (CAISO) 2017-2018 Transmission Planning Process (TPP) September 21-22, 2017 stakeholder meeting. In summary, we respectfully request CAISO to consider the following factors as it undertakes its current transmission planning efforts to improve reliability in the 2017-2018 TPP:

NEET West Recommends CAISO Develop a comparative evaluation of all submitted solutions and to develop ranking for the best Long-Term Reliability Solution for the Pacific Gas & Electric (PG&E) Oakland Area in 2017-2018 TPP

In the 2017-2018 TPP cycle (as done in prior TPP cycles) the CAISO indicates that they will continue to consider transmission, generation or non-transmission solutions as they revisit the assessment of Oakland area needs. To improve reliability and mitigate thermal overloads within the Oakland area, NEET West plans to re-submit two new transmission solutions that consist of a new 230 kV transmission source connecting Sobrante 230 kV substation or Moraga 230 kV substation to a new Oakland C 230 kV substation.

NEET West requests that the CAISO's 2017-2018 TPP cycle include a special assessment of the Oakland/East Bay area and to evaluate the NEET West project alternative against all other transmission and non-transmission alternatives being considered to determine the most reliable and cost effective solution. Due to its characteristics, long-term planning for the Oakland/East Bay Area should incorporate an approach similar to the San Francisco Peninsula Extreme Event Reliability Assessment previously performed in the CAISO's 2015-2016 TPP cycle. The Oakland/East Bay assessment should explore all viable mitigation options that address the special circumstances for this area; some of these circumstances include:

- A high-density urban area consisting of over 400 MW of load.
- Retirement of Oakland area combustion turbine (CT) generation.
- Elimination of the reliance on Special Protection Systems (SPS) or Remedial Action Schemes (RAS) per the CAISO's new High Density Urban Load Area planning standard,

which no longer allows “non-consequential load dropping in high density urban load areas in lieu of expanding transmission or local resource capability” to mitigate NERC TPL standard contingencies and transmission system impacts (for facilities ≥ 115 kV). NEET West recognizes there are multiple existing SPSs in the East Bay (including but not limited to, the Oakland 115 kV C-X Cable OL RAS, Oakland 115 kV D-L Cable OL RAS); these schemes are designed to drop load in order to comply with NERC TPL contingency events.

- The environmental restrictions and economic impacts of the Oakland combustion turbines (that are Regulatory Must Run (RMR) units) and the Northern California Power Agency (NCPA) combustion turbines in Alameda have on the system and how these restrictions and economics may be impacted with the addition of the NEET West Oakland Project.
- Exposure and restrictions of transmission system topology. Existing critical overhead transmission sources (Moraga-Claremont, Moraga-Station X, and Moraga Station J 115kV circuits) are confined to multiple-circuit corridors and traverse heavily-wooded areas, foothill ridges and canyons. These conditions limit accessibility, and expose these facilities to causes of common-corridor outages (such as fire). Likewise, downtown Oakland's aging network of 115 kV underground cables (gas-filled pipe-type cables constructed in the 1960s) offer limited access due to heavy urban development, and are also exposed to seismic considerations (proximity and orientation to the Hayward Fault). All these factors complicate the timely restoration and/or reinforcement of existing circuits, and likewise present routing challenges for new facilities. Planning studies should consider the implications of multiple-circuit/extreme outages, and the potential for sustained unavailability of one or more circuits.

Finally, NEET West would appreciate if CAISO can provide clarification to the following questions that would help support better comparative evaluation of different project solutions:

1. NEET West respectfully requests that the CAISO establish/confirm specific assumed retirement dates for both the Dynegy Oakland and Alameda Municipal Power (AMP) CTs. Unavailability of this generation directly impacts the required timing and magnitude of potential long-term solutions. The Dynegy Oakland CTs are shown as out-of-service/retired in for all three cases spanning the 10-year Planning Horizon (2019-2027). It is noted that the Alameda CTs (total of ~ 50 MW, installed in 1986) are on-line for the 2019 and 2022 Heavy Summer cases, but off-line in the Year Ten 2027 Heavy Summer case (presumably retired due to age ≥ 40 years per Section 4.7.5 of the CAISO 2017-18 TPP Study Plan). In AMP's March 9, 2015 comments to the CAISO's 2015-16 TPP Assessment, AMP expressed concern regarding the operating restrictions and potential unavailability of the Alameda CT units.
 - a. The prior 2016-17 TPP Assessment indicated that the ISO was “working with the Oakland generator owner to assess the expected life of the existing generation”. Has

CAISO concluded its assessment and made a final decision on the retirement assumption for the Oakland CTs?

- b. Has the ISO conducted further assessment of, and made any changes to, the dispatch or retirement assumptions for the AMP CTs?
2. The Assessment identifies “system upgrade or preferred resource” as the recommended mitigation solution to address contingency overloads of the Oakland 115 kV underground cables. Can you please provide more information on these proposed solutions?
3. The CAISO 2017-18 TPP Greater Bay Area preliminary results tables identify high normal and contingency voltages in the East Bay Area, especially for the 2019 cases. There may be a need to verify and potentially correct the assumptions for load power factor, as well as the Moraga 230/115kV transformers’ variable transformer tap settings:
 - a. Load power factor assumptions are noticeably different for the 2019 versus 2022 GBA Summer Peak Cases. Looking at the East Bay non-conforming loads (Zone 307) only, the 2019 Summer Peak GBA case shows a total non-EE load 655.5MW, -54.6MVAR (0.996 *leading* PF) versus the 2022 case’s non-EE load of 672.8MW, +95.8 MVAR (0.990 *lagging* PF).
 - b. The 2019 Summer Peak GBA case shows unbalanced/circulating MVARs among Moraga 230/115kV transformers #1, 2, and 3 with -329.5, -91.8, +169.3 MVARs respectively. Transformer #1’s variable tap (TCUL) setting may require modification/update.
4. The CAISO’s 2018 Local Capacity Technical (LCT) Requirements Study (published May 2017) indicated that the Oakland Area load modeled in the LCT Greater Bay Area cases differed from 2015 and 2016 real-time operations data and showed a “discrepancy in load forecast distribution among substations in the area”, which resulted in the extension of additional Reliability Must Run (RMR) contracts. The CAISO further indicated that it would work with PG&E and the California Energy Commission to correct this discrepancy in future studies. In the CAISO’s 2017-18 TPP cases, were the Oakland Area load levels and/or load distribution adjusted to reflect these identified changes? What consideration will the CAISO be giving to each of the proposed Oakland area project alternatives to determine which projects that will require ongoing RMR contracts versus those that eliminate this need/cost?
5. What are the 2017 peak loads (Summer, Winter) to date for the overall East Bay Area (Zones 307, 337), and how do these values compare to the load forecast assumptions in recent TPP Assessments?
6. At the 9/21-22, 2017 CAISO TPP Stakeholder meeting, PG&E indicated that the 2017 Peak load for the “Oakland Load Pocket” was 174.3MW. Can you please confirm:

- a. Is this value correct?
 - b. What substations/loads comprise this value?
 - c. Does this load value recognize the gross demand of Alameda’s Cartwright substation (is not netted by potential output from the Alameda CTs)?
 - d. What were the 2015 and 2016 Summer Peak load values for this same load pocket?
 - e. Were the Winter Peak values for 2015–2017 lower than the Summer Peak values?
7. NEET West requests the CAISO and PG&E to consider an alternate/additional “Oakland Area” load definition to the Oakland Load Pocket which also includes the loads at Stations Claremont/K, D, and X. For this broader definition can you please confirm:
- a. Can distribution loads be transferred between K, D, or X and Stations C and L?
 - b. What are the 2015, 2016, and 2017 (to date) Summer Peak load values for this larger Oakland Area load definition (includes K, D, L, C, and X plus Alameda Cartwright, Port of Oakland, and Schnitzer Steel)?
8. Do the 2022 “High CEC Forecast” sensitivity cases account for (or have you considered an additional sensitivity study of) potentially significant load growth associated with the Port of Oakland’s redevelopment of the Oakland Army Base, further redevelopment at the former Navy Base, increased electricity use by ships while at berth, electrification of port equipment, and Alameda Municipal Power’s development of Alameda Point?

NEET West Recommends CAISO Develop a Long-Term Reliability Transmission Solution for the Desert Area 2017-2018 TPP

To improve reliability, mitigate thermal overloads of the existing 230 kV transmission network in the West of Devers area¹, and address the growing deliverability constrained Desert Area, NEET West plans has submitted a proposal to construct a new 500 kV transmission system from Mira Loma 500 kV substation to Red Bluff 500 kV substation with 50% compensation.

A new Mira Loma – Red Bluff 500 kV Transmission System would provide a multi-value (reliability, economic, policy) long term benefit solution that:

- Addresses the Desert Area Constraint (DAC) which was identified as one of the more robust conclusions of the California Energy Commission (CEC) Renewable Energy

¹ As part of the CAISO 2017-2018 TPP, the preliminary reliability results identify existing transmission elements can be subject to thermal overloads under several category P6 contingency conditions (up to 25% as reported by CAISO in 2022 Summer Off-Peak with Maximum PV Output). Furthermore, the project will improve the voltage profile on 500 kV system network from Alberhill, Valley, Devers, Colorado River, Rancho Vista, Red Bluff, Serrano, and also on 230 kV transmission network from Devers, El Casco, Etiwanda, Mirage, Mira Loma, Rancho Vista, San Bernardino, Serrano, Vista, Wildlife, and 115 kV network at Devers and Alberhill.

Transmission Initiative 2.0 Final Plenary Report (February 2017) to emerge as a serious issue prior to 2030, that affects deliverability of resources from a broad area of southeastern California, and should be a priority for further planning.

- Will eliminate and/or minimize the congestion management costs which are used to mitigate thermal issues on the existing 500 kV transmission network. Depending on the amount of congestion that occurs as a result of the Desert Area Constraint, the costs could be significant. Construction of a new Mira Loma – Red Bluff 500 kV transmission system would reduce the amount of congestion management necessary (including generation curtailments) to alleviate the thermal issue and consequently economic savings could be realized. Further analysis would be required to quantify the economics of congestion management costs expended annually in order to maintain system reliability for this transmission line.
- Minimizes generation curtailment, and also continued reliance on the existing SPS, specifically Inland SPS and West of Devers SPS, and continued reliance on operating procedures for voltage and thermal control.
- Complements integration of CAISO-approved participating transmission owners’ projects² and the approved competitive transmission solicitation projects.
- Supports Eastern LA Basin Local Capacity Requirement (LCR) Sub-Area process. The LCR need for the Eastern LA Basin sub-area is based on the need to mitigate post-transient voltage instability that is caused by the loss of the Alberhill – Serrano 500 kV line, followed by an N-2 of Red Bluff-Devers #1 and #2 500 kV lines. The LCR need to mitigate this post-transient voltage instability concern is determined to be approximately 2,230 MW (source: CAISO TPP 2015-2016), which is to be met by available resources in the Eastern LA Basin sub-area.
- Addresses a reactive power deficiency. With the continued load growth and addition of renewable generation in the Eastern area, there is voltage degradation to the system that was observed at the Red Bluff, Serrano, and Colorado River substations. With the inclusion of the new proposed Mira Loma - Red Bluff 500 kV transmission system, as required to mitigate thermal overload problems, the base case voltage issues identified at the previously mentioned substations were improved.

² Path 42 Upgrade Project (2015)
Devers – Mirage 230 kV Lines Upgrade (2015)
Tehachapi Renewable Transmission projects (2016)
Lugo – Eldorado 500 kV line reroute (2017)
Suncrest 300 MVar SVC (2017)
Sycamore – Penasquitos 230 kV line (2017)
El Dorado – Lugo Series Caps Upgrade (2019)
Lugo – Mojave Series Caps Upgrade (2019)
West of Devers Upgrade Project (2020), and
Delaney-Colorado River 500 kV line Project (2020).

- Continues to support integration of the renewable generation in CAISO. NEET West’s proposed project will support the integration of renewable generation. The most recent Cluster 9 Phase 1 Interconnection Study Report, SCE Eastern Bulk Area Report (January, 2017), identified numerous thermal overloads and low voltages conditions with all facilities in-service. This constraint is commonly referenced as the “Desert Area Deliverability Constraint”. This constraint is of primary importance to California renewable integration because it affects the deliverability of generators in several energy zones, including Riverside East, Tehachapi, Imperial, San Diego South and other non-CREZ areas.

In closing, NEET West requests that the 2017-2018 TPP evaluation by CAISO include the reliability evaluation of the NEET West Mira Loma – Red Bluff 500 kV transmission project. The comprehensive evaluation should also consider economic and public policy benefits of the project in order to properly measure and compare the NEET West project alternative against other alternatives considered when determining the most cost effective long-term solution.

Consideration of Preferred Resources Solutions

Furthermore, NEET West is encouraged to see that preferred resources and energy storage solutions were highlighted as potential mitigation solution to address several reliability issues in the system during the 2017-18 TPP cycle. NEET West recognize that while energy storage has sometimes been classified as a generation resource, the operational characteristics of advanced storage technologies and their use as transmission assets are worth exploring. Storage resources could potentially provide substantial benefits to improving transmission grid reliability and congestion³. However, it is important to create a transmission planning process where energy storage will be enabled to provide multiple services (including both cost-based and market-based services) and tested as this will ensure full capability of the resource, thereby maximizing their efficiency and value for the system and to the customers. To this point, and recognizing that CAISO is welcoming energy storage as potential mitigation solution to solving reliability issues in the current 2017-18 TPP cycle, NEET West may propose energy storage projects as an alternative or subset of a comprehensive mitigation solution for a new infrastructure. To properly examine energy storage as non-wires alternative and compare it against all considered transmission solutions, NEET West encourages the CAISO to work with the appropriate agencies to identify the methodology and the process on how non-wires reliability solutions can be selected in place or as part of the transmission

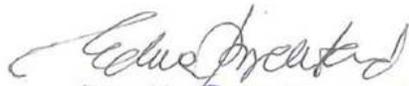
³ On November 9, 2016, FERC Commission staff led a technical conference to discuss the utilization of electric storage resources as transmission assets compensated through transmission rates, for grid support services that are compensated in other ways, and for multiple services. In Western Grid, the Commission accepted Western Grid's proposal to provide cost-based rate recovery for electric storage resources through transmission rates based on the proposed uses (voltage support and thermal overload protection for relevant transmission facilities) and on other conditions Western Grid proposed, including a commitment to forego any sales into CAISO's organized wholesale electric markets.

projects. NEET West would also like to see the methodology that CAISO will apply and to test an energy storage resource (non-wires solution) and how that resource will be compared in a cost/benefit analysis to other transmission alternatives that could provide the same type of service.

Conclusion

NEET West commends CAISO's staff for all of the time and effort that it put into the 2017-2018 TPP. NEET West submits these comments with the goal of enhancing the processes utilized in the evaluation of reliability projects in the transmission planning process. NEET West appreciates the opportunity to participate in the transmission planning process and to provide these comments.

Sincerely,



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